Chemistry

General senior subject

Chemistry is the study of materials and their properties and structure.

Students study atomic theory, chemical bonding, and the structure and properties of elements and compounds. They explore intermolecular forces, gases, aqueous solutions, acidity and rates of reaction. They study equilibrium processes and redox reactions. They explore organic chemistry, synthesis and design to examine the characteristic chemical properties and chemical reactions displayed by different classes of organic compounds.

Students develop their appreciation of chemistry and its usefulness; understanding of chemical theories, models and chemical systems; expertise in conducting scientific investigations. They critically evaluate and debate scientific arguments and claims in order to solve problems and generate informed, responsible and ethical conclusions, and communicate chemical understanding and findings through the use of appropriate representations, language and nomenclature.

Students learn and apply aspects of the knowledge and skills of the discipline (thinking, experimentation, problem-solving and research skills), understand how it works and how it may impact society.

Pathways

A course of study in Chemistry can establish a basis for further education and employment in the fields of forensic science, environmental science, engineering, medicine, pharmacy and sports science.

Objectives

By the conclusion of the course of study, students will:

- describe and explain scientific concepts, theories, models and systems and their limitations
- apply understanding of scientific concepts, theories, models and systems within their limitations
- analyse evidence
- interpret evidence
- investigate phenomena
- evaluate processes, claims and conclusions
- communicate understandings, findings, arguments and conclusions.

Structure

Unit 1	Unit 2	Unit 3	Unit 4
Chemical fundamentals — structure, properties and reactions • Properties and structure of atoms • Properties and structure of materials • Chemical reactions —reactants, products and energy change	**Molecular interactions and reactions** • Intermolecular forces and gases • Aqueous solutions and acidity • Rates of chemical reactions	**Equilibrium, acids and redox reactions** • Chemical equilibrium systems • Oxidation and reduction	**Structure, synthesis and design** • Properties and structure of organic materials • Chemical synthesis and design

Assessment

Schools devise assessments in Units 1 and 2 to suit their local context.

In Units 3 and 4 students complete four summative assessments. The results from each of the assessments are added together to provide a subject score out of 100. Students will also receive an overall subject result (A–E).

Summative assessments

<table>
<tr><th colspan="2">Unit 3</th><th colspan="2">Unit 4</th></tr>
<tr><td colspan="2">Summative internal assessment 1 (IA1):
• Data test</td><td rowspan="2"></td><td rowspan="2">Summative internal assessment 3 (IA3):
• Research investigation</td><td rowspan="2"></td></tr>
<tr><td colspan="2">Summative internal assessment 2 (IA2):
• Student experiment</td></tr>
<tr><td colspan="5">Summative external assessment (EA): 50%
• Examination</td></tr>
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Recommendations: C or better in Semester 1 Science, C or better in English and C or better in Core Maths